



INTELLIGENT TRAFFIC CONTROL AND VEHICLE RECOGNIZATION SYSTEM

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ABSTRACT

Thanks to rapid urbanization there's a requirement for implementing an efficient control system to avoid significant congestion. And also, to form a much better resolution for ambulance clearance helps to guard the human life. the concept behind the projected system is to supply effective control systems by the use of embedded technologies. This project concentrates on ambulance clearance and also the stolen vehicle detection. This makes use of RFID, MOTOR, liquid crystal display and ZIGBEE in conjunction with embedded technology. Here every vehicle is placed with an RFID tag. Whenever the RFID reader reads the tag of ambulance it activates the red lightweight for that specific path until the reader reads the RFID tag. Whenever the RFID reader reads the tag of stolen vehicle it activates the red lightweight for that specific path until the reader reads the RFID tag and shut the gate. once the tag of stolen/ ambulance vehicle is browse by the reader it activates the Red signal and sends the corresponding information to regulate area through Zigbee. This prototype are often tested using Simulation tool and also the expected results will be obtained.

KEYWORDS: Arduino Uno, FID Reader, FID tag, Red light-emitting diode, LCD 16 * 2, L293D Motor Driver, DC motor, ZigBee TX RX combine.

I. INTRODUCTION:

India is the second most inhabited Country within the World and could be a fast growing economy. it's seeing terrible road congestion issues in its cities. Infrastructure growth is slow compared to the expansion in variety of vehicles, due to house and value constraints Traffic management and management has become a crucial task in today's fast moving activities. Traffic means that moving from one location to a different. it should be via road transport, shipping, by rail or maybe by air. variety of vehicles and variety of tracks for movements are there. Also, Indian traffic is non lane primarily based and chaotic. It desires a control solutions, that are totally different from the developed Countries. Intelligent management of traffic flows will cut back the negative impact of congestion. In recent years, wireless networks are wide employed in the road transport as they supply additional price effective choices Technologies like zigzag Bee, RFID and GSM are often employed in control to produce price effective solutions. RFID could be a wireless technology that uses frequency magnetism energy to hold data between the RFID tag and RFID reader. Some RFID systems can solely work with within the vary inches or centimeters, whereas others may match for a hundred meters (300 feet) or additional. A GSM modem could be a specialised kind of modem, that accepts a SIM card and operates over a subscription to a mobile operator, rather like a itinerant. AT commands are used to management modems. These commands come back from Hayes commands that were utilized by the Hayes good modems. The zigzag Bee operates at low-power and may be used in the slightest degree the amount of labor configurations to perform predefined tasks. It operates in school of thought bands. liquid crystal display implies liquid show. we have a tendency to utilize 16*2 shows in our framework. liquid crystal display has various applications like laptop screens, TV then on. we have a tendency to utilize 2 liquid crystal display in shading inexperienced and red to inform activity light-weight. At the purpose once rescue vehicle is known around, then red light-weight is supplanted with inexperienced, which means to framework offer inexperienced activity flag.

II. LITERATURE SURVEY:

1. Intelligent Traffic Control System (Emergency Vehicle Clearance & Lost Vehicle Detection)

Abstract: Currently many urban cities are facing the main problem of promptly increasing the automobiles causes increasing the traffic in various cities. There are also the main problem concerning to vehicles is that the robberies of vehicles. So for that this system introducing an intelligent traffic control system with the further modules as locating the lost vehicle with by using RFID system and the lane clearance of crisis vehicles. In this system each vehicle is furnished with a unique special RFID (radio frequency identification tag) which has a unique identification number. At traffic signal junction there are the RFID readers for identification of vehicles. The task of counting vehicle is done at traffic controller room by the microcontroller with help of IR (Infrared) sensors. It will also assemble fine form bank account if any vehicle disrupts the traffic signal rule. Also by finding out the surrounding location of the pinched vehicle and give this information to the nearest police station or policeman. So it can be easily to find out lost vehicle. The emergency vehicles like police vans and ambulance, fire brigade's trucks have always had to reach at the destination. When an emergency response vehicle is imminent the junction, it will communicate to the traffic controller in the junction to turn ON the green light. This system gives very efficient

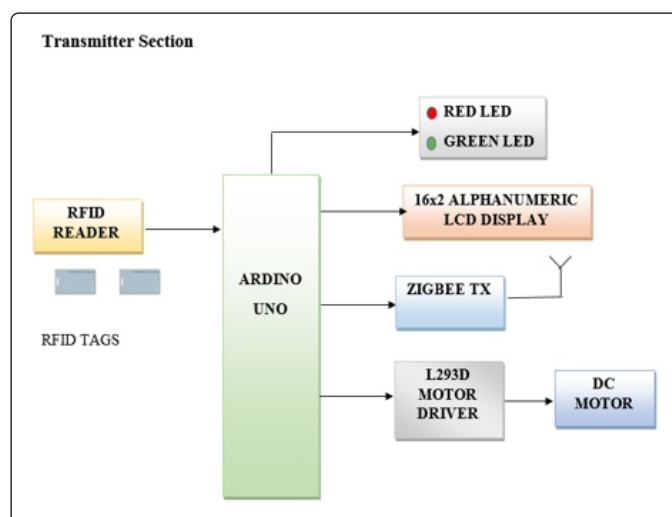
way to reduce the cramping on road.

2. Improved Traffic Control Systems for Emergency Vehicle Clearance and Stolen Vehicle Detection

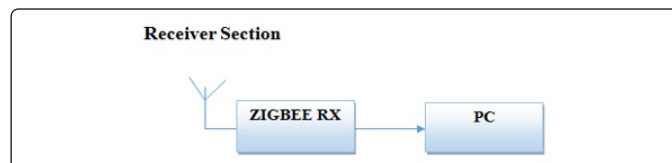
Abstract: Due to rapid urbanization there is a need for implementing an effective traffic control systems to avoid heavy congestion. And also to make a better solution for ambulance clearance helps to protect the human life. The idea behind the proposed system is to provide effective traffic control systems by the use of embedded technologies. This paper concentrates on ambulance clearance and the stolen vehicle detection. This makes use of RFID, GPS, and GSM along with embedded technology. Here each vehicle is placed with an RFID tag. Whenever the RFID reader reads the tag of ambulance it turns ON the green light for that particular path till the reader reads the RFID tag. The position of theft vehicle is located with the help of GPS and the information is transferred through GSM to the control room. When the tag of stolen vehicle is read by the reader it turns on the Red signal. This prototype was tested using Simulation tool and the expected results are obtained

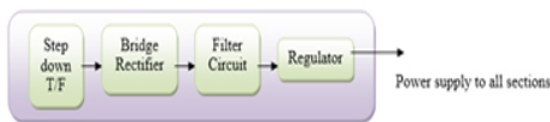
A. BLOCK DIAGRAM:

Transmitter section:

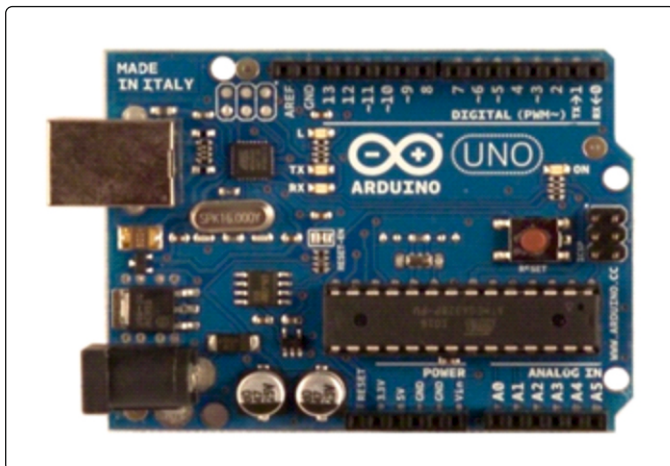


Receiver section:



POWER SUPPLY**Block diagram description:**

- Arduino Uno is that the heart of our project.
- Project consists of Transmitter part & Receiver part
- Transmitter part consists of RFID reader, Arduino UNO, Redled Signals, 16x2 alphanumerical show[LCD|digital display|alphanumeric display} display, L293d Motor Driver, 60rpm geared Dc motor and zag Bee transmitter.'
- Receiver half consists of zigBee Receiver & PC.
- If RFID tag gets swapped by machine then inexperienced led becomes RED and liquid crystal display displays "Ambulance is coming" & Zig Bee transmits the info to manage space section (receiver part). Receiver section receives the info & displays constant on laptop.
- If RFID tag gets swapped by unauthorized vehicle then inexperienced led becomes RED and liquid crystal display displays "Stolen Vehicle Detected", Dc motor starts rotate in right-handed direction that indicates that gate is closed & ZigBee transmits the info to manage space section (receiver part). Receiver section receives the info & displays constant on laptop.

B. HARDWARE REQUIREMENTS:**I. ARDUINO UNO CONTROLLER****Features:**

- Microcontroller ATmega328
- Operating Voltage 5V
- Input Voltage (recommended) 7-12V
- Input Voltage (limits) 6-20V
- Digital I/O Pins 14 (of which 6 provide PWM output)
- Analog Input Pins 6
- DC Current per I/O Pin 40 mA
- DC Current for 3.3V Pin 50 mA
- Flash Memory 32 KB (ATmega328) of which 0.5 KB used by boot loader
- RAM 2 KB (ATmega328)
- EEPROM 1 KB (ATmega328)
- Clock Speed 16 MHz

LCD stands for liquid crystal show. lcd is finding wide unfold use substitution LEDs (seven section LEDs or different multi section LEDs) as a result of the following reasons:

1. The declining costs of LCDs.
2. The ability to show numbers, characters and graphics. this is in contrast to LEDs, that area unit restricted to numbers and a number of characters.
3. Incorporation of a refreshing controller into the lcd, thereby relieving the C.P.U. of the task of refreshing the digital display. In distinction, the led should be reinvigorated by the C.P.U. to stay displaying the info.

4. easy programming for characters and graphics.

These elements area unit "specialized" for being employed with the microcontrollers, which implies that they can't be activated by customary IC circuits. they're used for writing completely different messages on a miniature digital display.

III. ZIGBEE MODULE:

ZigBee can be a IEEE 802.15.4-based specification for a set of high-level communication protocols accustomed turn out personal house networks with very little, low-power digital radios.

The technology printed by the ZigBee specification is supposed to be easier and fewer expensive than different wireless personal house networks (WPANs), like Bluetooth or Wi-Fi. Applications embrace wireless light-weight switches, electrical meters with in-home-displays, traffic management systems, and different shopper and industrial instrumentality that require short-range low-rate wireless information transfer. Its low power consumption limits transmission distances to 10-100 meters line-of-sight, looking on power output and environmental characteristics

It supports two-way communication. it's supported IEEE 802.15.4 customary for WPANs. Application of ZIGBEE is low rate, long battery life and secures networking. It operates at a pair of 4GHz. ZIGBEE devices will type networks with Mesh, Star and Generic Mesh topologies among themselves. The network are often dilated as a cluster of smaller networks.

IV. RFID READER:

This module directly connects to any microcontroller UART or through a RS232 device to computer. It provides UART/Wiegand26 output. This RFID Reader Module works with any a hundred twenty five rate RFID tags.

Specifications:

5VDC through USB (External 5V provide can boost vary of the module) Current : < 50Ma

Operating Frequency: 125Khz

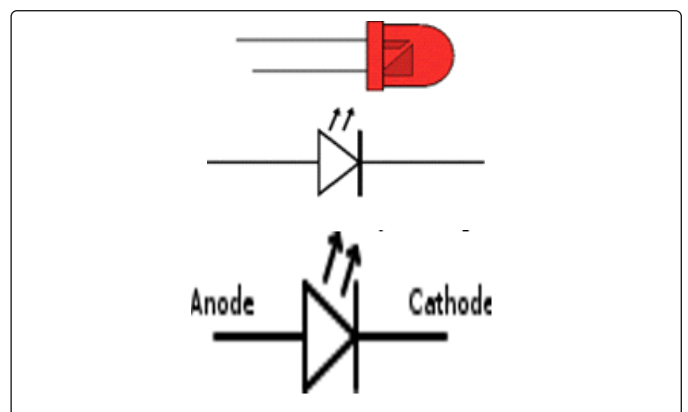
Read Distance: 10cm

Size of RFID reader module: 32mm(length) * 32mm(width) * 8mm(height)

V. diode (LED):

The longer lead is that the anode (+) and therefore the shorter lead is that the cathode (&minus). within the schematic image for AN led (bottom), the anode is on the left and therefore the cathode is on the correct. light-weight emitting diodes area unit parts for light-weight signalisation in electronics.

They are factory-made in numerous shapes, colours and sizes. for his or her low worth, low consumption and easy use, they need nearly fully pushed aside different light-weight sources- bulbs initially place

**II. DC MOTOR:**

ADC motor is an electrical motor that runs on direct current (DC) electricity.

It converts mechanical into voltage A current-carrying conductor generates a magnetic flux; once this is often then placed in AN external magnetic field, it'll expertise a force proportional to this within the conductor, and to the strength of the external magnetic field

The speed of a DC motor is directly proportional to the provision voltage, thus if we tend to reduce the supply voltage from twelve Volts to six Volts, the motor can run at [*fr1] the speed.

The speed controller works by variable the common voltage sent to the motor.

C. SOFTWARE REQUIREMENT:

- I. Arduino Uno
- II. Keil IDE
- III. Proteus
- IV. Flash Magic

D. ADVANTAGES:

- Reliable
- Economical
- Eco-friendly
- Low cost
- Maximize accuracy

E. APPLICATIONS:

- Traffic control
- Signaling system
- Ambulance detection

CONCLUSION:

With the implementation of this technique the manual effort and therefore the time on the a part of the traffic policeman is saved. because the whole system works mechanically, it needs very less human intervention. With this technique, holdup will be detected and managed accordingly; a taken vehicle will be detected by turning the signal to red and derived with the assistance of GPS. conjointly means is given to the emergency vehicles by clearing the lane by turning the signal to inexperienced in order that they reach their destinations at the earliest to save lots of the valuable lives of the many folks. additional improvement will be done by exploitation longer vary RFID readers..

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